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Type II PROGRESS REPORT

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II

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EVALUATION OF LANDSAT-2 DATA

FOR

SELECTED HYDROLOGIC APPLICATIONS

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Sioux Falls, SD 57198

Landsat-2 Investigation No. 23170

Contract No. NAS-53991A

23170

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CSCI 08H G3/43

(E76-10237) EVALUATION OF LANDSAT-2 DATA
FOR SELECTED HYDROLOGIC APPLICATIONS
Progress Report (National Oceanic and
Atmospheric Administration) 6 p HC \$3.50

A. Problems

Analysis of Phoenix March 17, 1975 soil moisture survey temporarily halted due to machine stretching of Landsat CCT, making it unusable. Replacement tape expected to arrive by late March. Aircraft (P-3) flight over Cranberry Lake test site aborted in February, rescheduled for mid-March.

B. Accomplishments

1. Digital Muirhead Display (DMD) (SMS-2) IR images of the Phoenix test site were prepared for 2015Z on 17 March and 18 March 1976 as well as 1015Z on 18 March 1975. 32 mm CRT displays of temperature differences have been generated for 2015Z, 3/18-2015Z, 3/17; 2015Z, 3/17-1015Z, 3/18; and 2015Z, 3/18-1015Z, 3/18. (Cf. figures 1 and 2). Necessary conversion of existing computer programs to accept SMS data has slowed progress in this area.

2. Landsat MSS 5 (0.6-0.7 μ m) and MSS 7 (0.8-1.1 μ m) digital data were compared with averaged soil moisture values for bare and vegetated fields from the Phoenix test site. Regression analyses produced a correlation coefficient of $r^2=0.75$ for a power fit of satellite MSS 5 radiance values vs. averaged soil moisture for bare fields, and an r^2 equal to 0.74 for a similar fit of MSS 7 values. (see figure 3). For vegetated fields, MSS 5 values remained almost constant, not affected by vegetation type or soil moisture. Using MSS 7 data, alfalfa fields increased in brightness as soil moisture increased, providing an r^2 of 0.88 for a parabolic fit. Wheat field MSS 7 brightness varied

little with moisture changes.

3. CCT's for all American River basin snow scenes for 1975 have been received. DMD prints for each date have been produced.

C. Significant Results

None.

D. Publications

None.

E. Recommendations

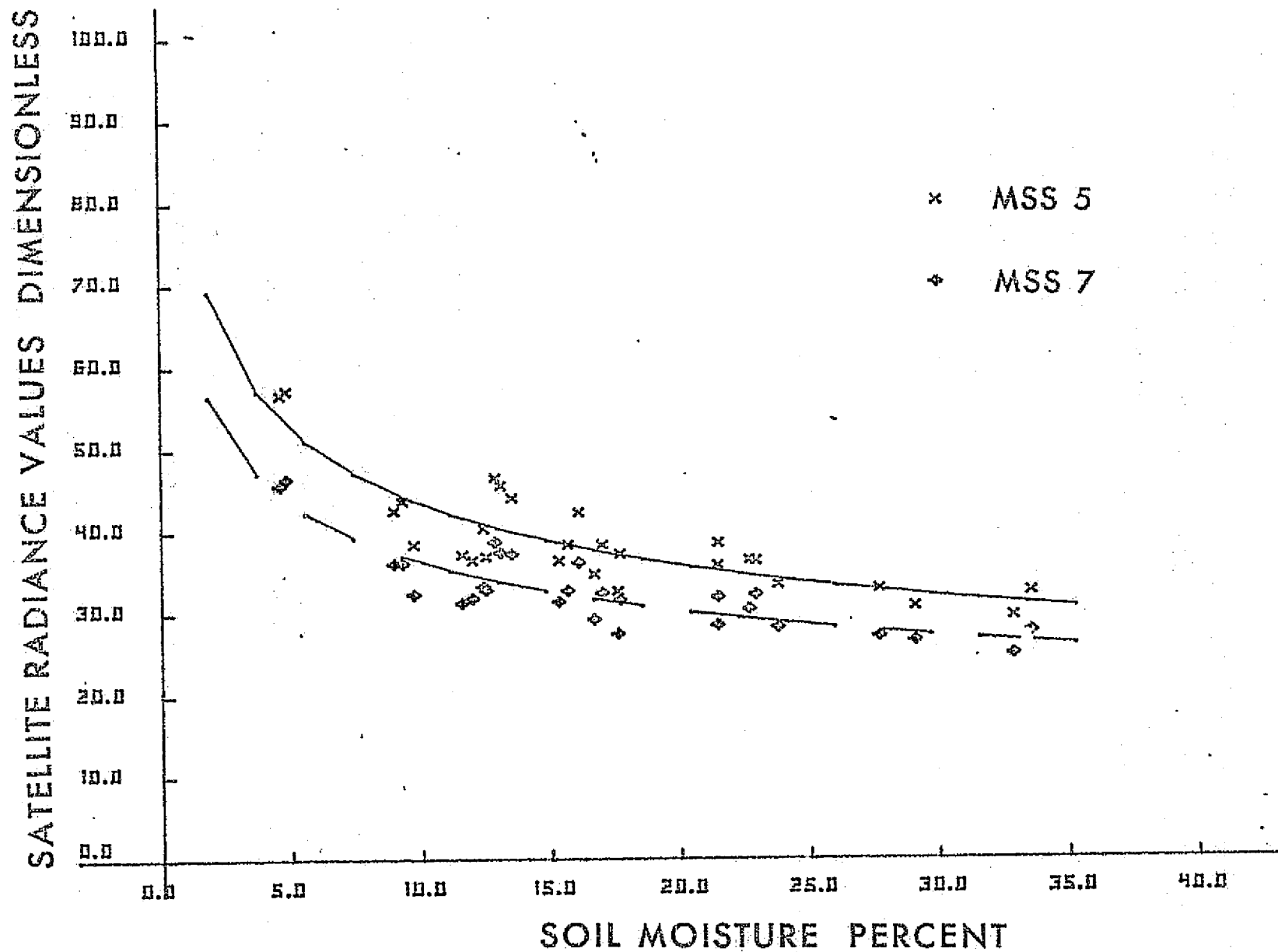
None.

F. Funds Expended

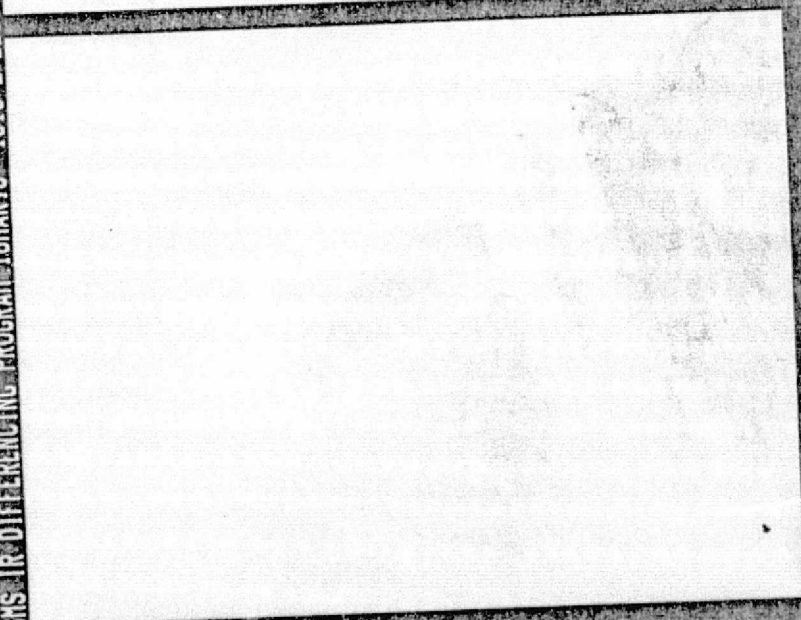
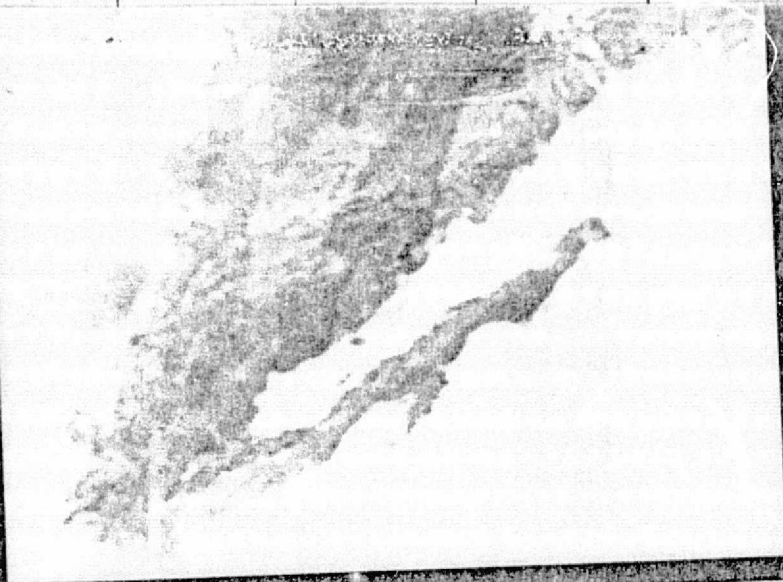
\$20.5K has been expended to date. Work performed during this period was charged to NOAA funds.

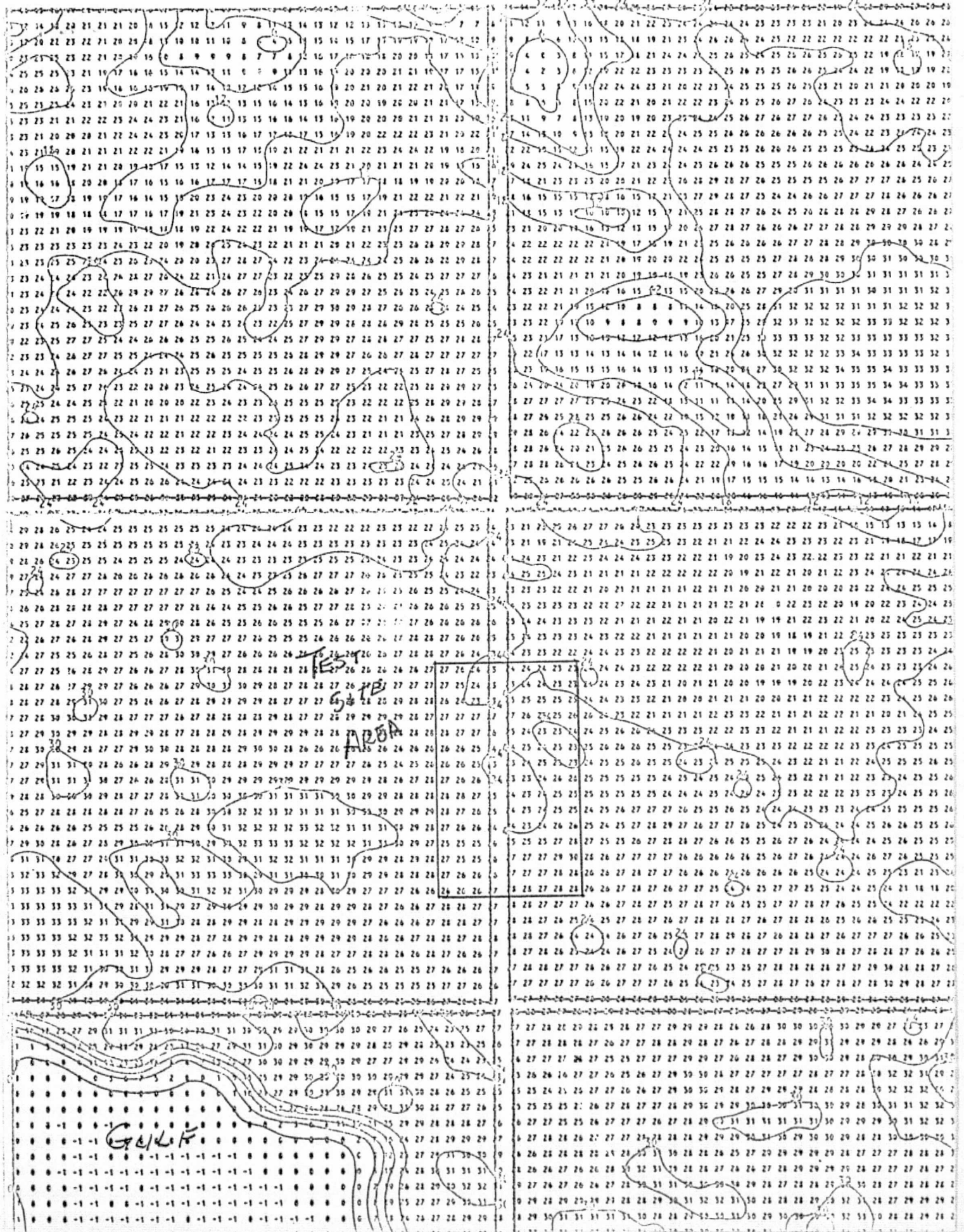
G. Data Use

CCT's were tested and screened. Damaged tape was returned. DMD images were processed.



SNS-IR DIFFERENCING PROGRAM 18MAR75 1015 Z LESS THAN 75 2015 Z





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